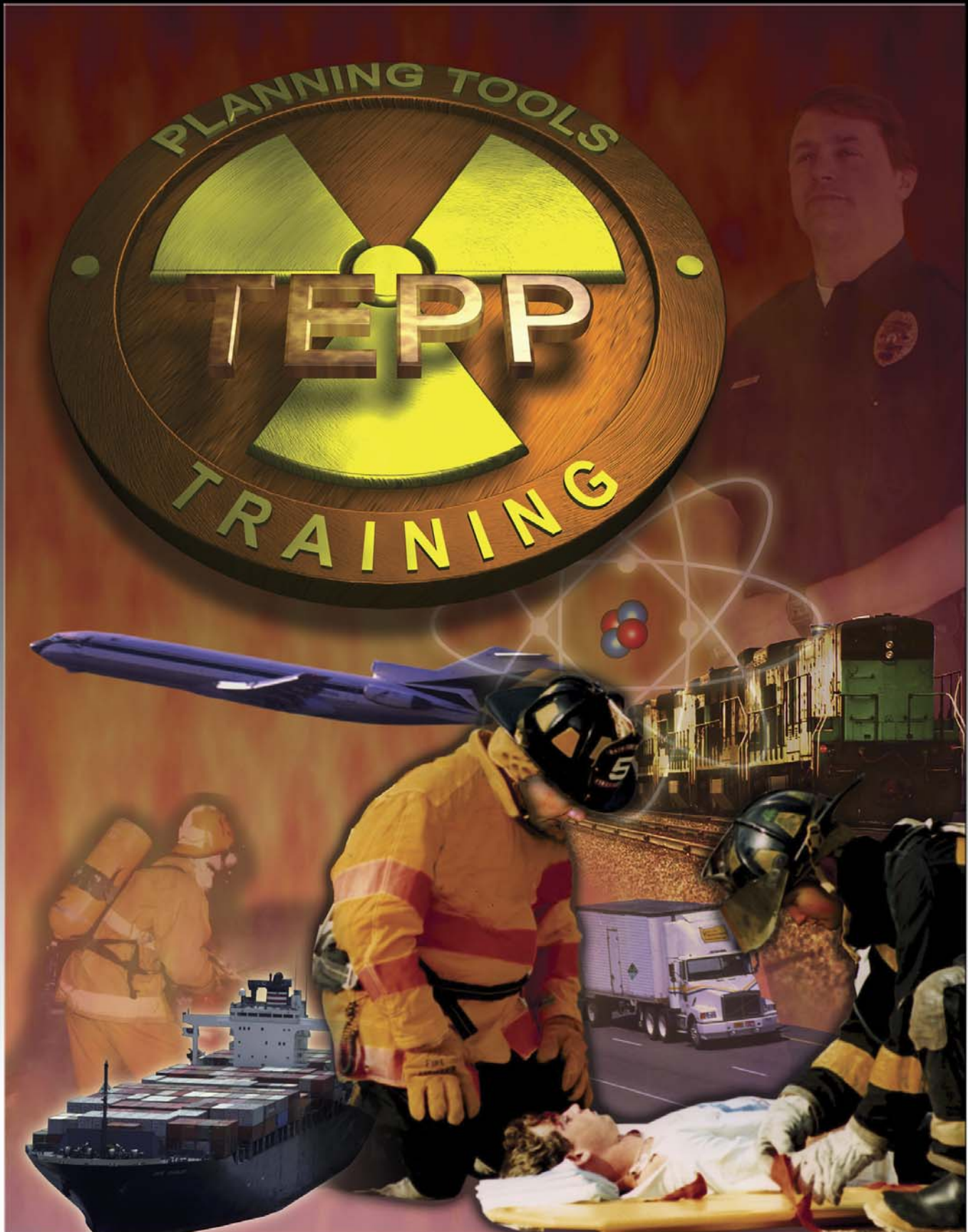




DEPARTMENT OF ENERGY



Spent Nuclear Fuel Hazard Class 7 Radioactive Scenario Package

Prepared for the Department of Energy Office of Transportation and Emergency Management

This page intentionally left blank

table of contents

planning tools



Transportation Emergency Preparedness Program (TEPP)

Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill



Phase 1 - Planning	2
Phase 2 - Drill Setup	3
Phase 3 - Drill Play	3
Phase 4 - Post Drill Activities	3
Safety Plan/Checklist	4
Summary	8
1.0 Introduction	9
2.0 Scope	10
3.0 Objectives	10
4.0 Example Schedule	13
5.0 Participation	14
6.0 Conduct	15
7.0 Narrative Summary/Timeline	20
8.0 Messages	23
9.0 Radiological Data	34
10.0 Meteorological Data	34
11.0 Public Information Data	34
12.0 Drawings/Props	35
13.0 Simulations	40
14.0 Security	40
15.0 Medical Data	40



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Checklist For Planning And Conducting The A Spent Nuclear fuel (Class 7-Radioactive) Emergency Response Drill

PHASE 1 - PLANNING

1. _____ Determine the scope, objectives and extent of play for the drill (drill may be modified to meet local needs and objectives)
2. _____ Determine drill participants
3. _____ Establish schedule and plan for the drill (Section 4.0 in Scenario Package should be modified based on drill dates/times)
4. _____ Notify proposed participating agencies and confirm support
5. _____ Determine locations for drill activities (command center, accident scene, dispatchers office, etc.)
6. _____ Develop a safety plan (use attached Safety/Plan Checklist)
7. _____ Determine if pre-notification to the media is necessary (if a sample media plan is needed refer to the "*Guidance for Planning, Conducting and Evaluating Transportation Emergency Preparedness Tabletops, Drills and Exercises*"). If so, appoint a Public Information Officer to handle notifications/inquiries
8. _____ Establish controller assignments and simulated roles (last page of Section 6.0)
9. _____ Pull applicable Objective Evaluation Checklists from the Objectives Module (these are to be included in the drill scenario packages for the controller)
10. _____ Modify the shipping document included in the drill package (Section 12) to include drill specific information (such as the emergency response phone number). Boxes on the shipping document where information should be provided are marked with an "x".
11. _____ Reproduce sufficient copies of completed/reviewed Scenario Packages, as well as copies of the applicable objective Evaluation Checklists from Manual Section IV
12. _____ Determine and acquire props needed for site simulation
13. _____ Conduct player and observer briefings



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools



PHASE 2 - DRILL SETUP

1. _____ Ensure all controllers know the schedule and their designated position
2. _____ Ensure all props have been evaluated and validated prior to set up
3. _____ Set up the props at each drill location
4. _____ Ensure safety precautions are in place
5. _____ Verify all controllers are in position and key players/agencies are available to begin the drill

PHASE 3 - DRILL PLAY

1. _____ Ensure safety is and remains the most important concern of the drill
2. _____ Ensure controllers are in place
3. _____ Ensure messages are distributed according to schedule
4. _____ Utilize hold messages if a break in play is needed
5. _____ Ensure ALL players and controllers at ALL drill locations receive the drill termination message

PHASE 4 - POST DRILL ACTIVITIES

1. _____ Dismantle drill scene props and return site to original state
2. _____ Direct all players and controllers to the debriefing location(s)
3. _____ Conduct drill debriefing based on Controller and Player Evaluations
4. _____ Document and track drill/exercise strengths and recommended improvement areas



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

SAFETY PLAN/CHECKLIST

This is an example of a Safety Plan and Checklist for a transportation emergency drill or exercise. The example is generic and is incomplete in that necessary event-specific information is not included.

Scope

This plan has been included as a scenario package checklist so that controllers will be able to anticipate and recognize unplanned events that could result in personal injury or unforeseen property damage. It enables event participants to be governed by the safety guidelines established for the event.

Pre-drill Safety Requirements

Controllers must be staged before the event is scheduled to begin to ensure there are no pre-existing safety concerns that could affect the start of the event. Controller assignments and locations are identified in Section 6.0 of the scenario manual. The Drill Lead Controller must obtain a safety check from all lead controllers prior to event commencement.

Drill Activity Boundaries and Off-Limit Areas

Drill boundaries, which define the areas at the incident scene that will be in and out of play, will be discussed in briefings, if applicable. Boundaries may also be defined by the “extent of play” for each objective, as shown in Scenario Package Section 3, or depicted on maps in the package. Safety concerns that arise during the drill will be dealt with immediately by the drill controllers in the affected area. As objectives are accomplished, certain areas may be allowed to return to normal activities.

Safety Equipment

Drill participants are required to follow all existing safety guidelines for the use of protective equipment. From the checklist below, mark an X next to the items that are applicable to this drill or exercise, and ensure that these items are provided for participants, as applicable.

- _____ controller communications
- _____ drill/exercise identification (i.e., armbands, vests, caps, etc.)
- _____ illumination devices
- _____ first aid kit
- _____ water coolers (field teams may be directed to carry their own water)
- _____ water carriers (rovers may be directed to deliver water to personnel)
- _____ personnel comfort items (specify)
- _____ fire extinguishers
- _____ safety harnesses/lifelines, etc. (specify)
- _____ eye/hearing protection devices (specify)
- _____ gloves (specify who and when they should be worn)
- _____ hard hats (specify who and when they should be worn)
- _____ other protective clothing (specify)
- _____ miscellaneous hand tools (specify)



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill


planning tools

Site Specific Hazards

Drill or exercise participants are required to follow all hazard postings in event areas. Participants must obey all traffic laws during the event. Response participants will NOT use emergency lights and sirens when responding to simulated accident scenes. Field teams will travel on designated roads and trails. Field team vehicles will be equipped with fire extinguishers and shovels. No vehicles should go off road where wildlife such as snakes and insects may be encountered.

In the event of electrical storms, high winds or other severe weather, participants will follow controller instructions. Field activities should be suspended or terminated under these conditions.

Controllers and responders must be mindful of symptoms of heat stress. Controllers will ensure that emergency response personnel are allowed the opportunity to rest whenever necessary. Controllers must halt drill play anytime a responder appears to be in distress and take all appropriate actions to ensure the well-being of individuals.

From the checklist below, mark an X next to the actual hazards that may be applicable to this drill or exercise. Special safety provisions should be made for all items checked.

- ☐ traffic (field teams need to be aware of road condition hazards and traffic, especially when performing radiological monitoring)
- ☐ terrain (field teams may be required to use unpaved roads. Each vehicle will be equipped with a fire extinguisher, shovel, bucket, and communications capabilities.)
- ☐ overhead obstructions and hazards
- ☐ electrical storms
- ☐ heat stress
- ☐ cold stress (hypothermia)
- ☐ high winds
- ☐ visibility conditions
- ☐ electrical equipment hazards
- ☐ mechanical equipment/machinery
- ☐ hazardous material/storage areas
- ☐ fuel loading concerns
- ☐ thermal hazards
- ☐ tripping hazards
- ☐ confined spaces
- ☐ elevated locations
- ☐ hazardous materials
- ☐ pest control (i.e., fire ants, wasps, snakes, ticks, mosquitoes, etc.)
- ☐ personnel safety provisions (individual responsibilities/limits)
- ☐ outside agency safety provisions (responsibilities/limits)
- ☐ vehicle safety provisions (i.e., traffic laws shall be obeyed, seat belts used, etc.)
- ☐ drill/exercise control provisions (i.e., safety briefings, how to handle actual emergencies, etc.)



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

General Safety Provisions

This section details specialized personnel assignments and functions related to safety concerns. The Controller Organization, found in Section 6.0 of the scenario manual, identifies personnel assignments. No changes will be made to controller assignments without prior assurance that any replacements have equal or greater understanding of safety concerns that could be encountered at the location to which they are assigned.

All safety concerns must be brought to the attention of the Drill/Exercise Lead Controller and the Drill/Exercise Safety Lead through the Controller organization.

Specific incidents and materials that may have adverse effects on people have been addressed in specific sections of the scenario manual. Every effort has been made to anticipate and minimize hazardous situations inherent in this drill/exercise. From the checklist below, mark an X next to the safety provisions that are applicable to this drill or exercise, and ensure that these provisions are communicated to participants and/or enforced.

- _____ individual participants are personally responsible for their individual safety
- _____ each participant must monitor his/her own physical condition for signs of overexertion or distress
- _____ any participant who observes another person injured or otherwise in need of assistance will immediately cease drill/exercise activities and render aid/call for assistance
- _____ all injuries, no matter how slight, must be immediately reported to the nearest Controller
- _____ all ascents or descents from elevated heights will be by ladder, stairway or other safe method. Jumping from elevated positions is not allowed
- _____ Controllers must be familiar with the hazards of the equipment involved and the required safety measures
- _____ actual emergencies will be dealt with by a shadow force. If an emergency occurs that requires drill/exercise responders to assist, the Lead Controller will suspend or terminate part or all of drill play as deemed necessary.



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill



Security/Public Safety Provisions

From the checklist below, mark an X next to the security and public safety provisions that are applicable to this drill or exercise. Special safety provisions should be made for all items checked.

- _____ a backup or “shadow” force (fire, EMS and police) is in place to ensure community coverage is not impacted by event response
- _____ event calls should/may go to non-emergency lines to ensure that actual “911” calls are handled expeditiously
- _____ security personnel must keep firearms holstered at all times during the drill/exercise
- _____ drill/exercise play will be suspended in the event of an actual emergency
- _____ emergency vehicles will respond without lights and sirens
- _____ cordoning off of large public areas will be simulated unless cordoning is required for safety reasons
- _____ rerouting traffic will be simulated unless cordoning is required for safety reasons

Vehicle Safety Provisions

From the checklist below, mark an X next to the vehicle safety provisions that are applicable to this drill or exercise. Ensure that these provisions are communicated to participants and/or enforced.

- _____ no vehicle will be driven in such a manner that posted speed limits are exceeded or safe driving rules are violated
- _____ only those vehicles involved in the drill/exercise will be used for movement.
- _____ vehicles may not be mounted or dismounted until they come to a complete stop
- _____ spotters will be used when backing vehicles out of areas where other people or vehicles are present
- _____ roadblocks will be simulated by placing a blocking vehicle on the shoulder of the road and notifying an observer that a roadblock has been established
- _____ all Controller vehicles should be identified/placarded to eliminate player confusion or concerns.
- _____ seat belts must be worn in moving vehicles if the vehicle is equipped with them

This completed Scenario Package Planning Checklist should be kept as part of the hard-copy documentation file for drill planning for this event.

Name of Drill Planner _____

Signature _____

Drill Date _____

Who Completed Checklist _____



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

SUMMARY

Spent Nuclear Fuel

Transportation Emergency Preparedness Drill

- Drill involves a rail accident.
- Spent Nuclear Fuel (Class 7 Radioactive) is in Type-B containers. No radiological breach release occurs.
- The drill simulates the initial occurrence of the accident through the arrival and integration of a radiation response team into the Incident Command System.



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools



1.0 INTRODUCTION

This manual provides the basis for an emergency response drill of a simulated transportation accident during rail transport of spent nuclear fuel (Hazard Class 7 Radioactive).

Responding agencies may include several or more of the following: local municipal and county fire, police, sheriff and Emergency Medical Services (EMS) personnel; state, local, and federal emergency response teams; emergency response contractors; and other emergency response resources that could potentially be provided by the transporter and the originating facility (rail company).

The goals of this drill are to:

- demonstrate the emergency response notification and communication system
- observe actual response times of emergency responders to a simulated accident scene and rail access points
- verify equipment operability (including radiological monitoring equipment) and the accuracy of field emergency response procedures
- ensure all appropriate notifications are made in accordance with local, state, and federal regulations
- identify and assess hazards
- determine and implement protective measures required for both responder personnel safety and public safety
- determine additional response resources required to contain and restore the site and make appropriate notifications to obtain those resources

This manual provides the guidance for conducting the drill in a safe, efficient, coordinated manner and provides a historical record of the drill.

NOTICE

The drill presented consists of postulated data for a simulated railway transportation accident involving containers of spent nuclear fuel.

This drill was developed to observe the ability of emergency response personnel to deal with a hypothetical incident. Its purpose is to provide emergency responders with sufficient data to allow them to respond according to existing emergency plans and procedures.

The incident portrayed in this drill is hypothetical and should not be considered as actual or probable.



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

2.0 SCOPE

This drill scenario should be used to demonstrate emergency response resource deployment for the local community to respond to a railway accident involving spent nuclear fuel. It may also be used to demonstrate the initial phase of the emergency response notification and communication system to:

- observe actual (i.e., maximum) response times of emergency responders to a simulated accident scene
- demonstrate response activities, including
- responder deployment
- responding agency interaction
- Incident Command System (ICS) establishment and operations
- identification and assessment of hazards
- incident control

3.0 OBJECTIVES

The objectives listed below are based on a simulated transportation (railway) accident and should be performed in accordance with the appropriate state, county, and local community procedures and according to the standards and limits outlined in each respective extent of play. The numbering system employed for the objectives is based on the objective numbers from the Federal Emergency Management Agency (FEMA) Hazardous Materials Exercise Evaluation Methodology (HM-EEM); the objectives are not in sequential order. A complete listing of the 16 FEMA HM-EEM objectives (and evaluation criteria checklists) is contained in the Objectives Module Manual.

Objective 1. Initial Notification of Response Agencies and Response Personnel.

Demonstrate the ability to notify response agencies and to mobilize emergency personnel.

Extent of Play:

This objective should be demonstrated by each participating response agency as it would in an actual emergency. All appropriate primary or backup communications systems (radio, cell phone, land line, etc.) should be used during the drill as in an actual emergency.

The drill will be initiated by contacting the local emergency notification network and reporting the simulated accident location. All appropriate federal/state/county/local response agencies and units agreeing to participate should be appropriately notified and should respond. All response units should be timed from receipt of emergency notification to arrival on scene.

Personnel/units should be deployed, real-time, to the accident scene based on accident conditions relayed via the notifications system. Responding units shall not transit in an “emergency mode” (i.e., no lights or sirens) and should not take/perform any action



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools



that impacts the general public, such as establishing road blocks or detours at or near the simulated incident scene, unless it is necessary for participant safety.

Objective 2. Direction and Control

Demonstrate the ability to direct, coordinate, and control emergency response activities through operation of an Incident Command System (ICS) and other direction and control structures.

Extent of Play:

This objective should be demonstrated by the arrival and assumption of the Incident Commander (IC) position by the first responding unit/personnel as it would be in an actual emergency. The position and responsibility of IC should be transferred to the senior response officer, upon arrival, and a status turnover should be conducted. A visible command post, communication system, and organizational structure should be established. (Assumption: Response personnel have been trained to conduct response using ICS).

Objective 3. Incident Assessment

Demonstrate the ability to identify the hazardous materials involved in an incident/accident and to assess the hazards associated with the material involved during both the emergency and post-emergency phases.

Extent of Play:

This objective should be demonstrated by the active assessment of the incident hazards, including a preliminary observational survey of possible injuries, physical hazards at the accident site, materials released, extent of release, release receptors, and the hazards associated with the materials. The initial assessment information should be obtained from placards, shipping documents, labeling, and the North American Emergency Response Guidebook. Based on the preliminary observational assessment, a determination of further resources to physically assess the incident site should then be made. If resources are available, further physical assessment should occur. If local resources are not available for further assessment, requests for assistance should be made as appropriate (State Response Team or other higher level technical responders).

Objective 4. Resource Management

Demonstrate the ability to mobilize and manage resources required for emergency.

Extent of Play:

This objective should be demonstrated by determining the resources required for response as result of the incident assessment. Once the resources required are determined, proper notification and mobilization should occur. Additional resources should be integrated into the response effort by the Incident Commander.



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Objective 5. Communications

Demonstrate the ability to establish and maintain communications essential to support response to an incident/accident.

Extent of Play:

This objective should be demonstrated by establishing and maintaining communication between all resources activated for the response. All appropriate primary or backup communications systems (radio, cell phone, land line, etc.) should be used during the drill as in an actual emergency. A communications system between response personnel should be established on site by the Incident Commander, as should offsite communications to local, state, federal, shipper, transportation, and contract resources.

Objective 10. Response Personnel Safety

Demonstrate the ability to protect emergency responder health and safety.

Extent of Play:

This objective should be demonstrated by the establishment, by the site safety officer, of one or more zones to regulate the movement of personnel throughout the site; determination and usage of appropriate personal protective equipment (PPE); and usage of appropriate monitoring equipment for site hazards.

Objective 11. Traffic and Access Control

Demonstrate the organizational ability and resources to implement site security and to control evacuation traffic flow and access to evacuated and sheltered areas.

Extent of Play:

This objective should be demonstrated by the effective implementation of site security measures by appropriate resources and effective traffic control to divert unnecessary traffic away from the area of the incident/accident. Although security units should be sent to the proper locations for traffic control, no actual roadblocks/detours, etc., shall be established that would affect the general public, unless it is necessary for participant safety.

Objective 14. Emergency Medical Services

Demonstrate the adequacy of personnel, procedures, equipment, and vehicles for transporting contaminated and/or injured individuals, and the adequacy of medical personnel and facilities to support the operation.

Extent of Play:

This objective should be demonstrated by the effective determination of EMS resources required for the accident site, communication of potential contamination hazards that may require pre-notification to EMS and other medical support personnel, and steps taken by EMS personnel to plan and prepare for potential contamination hazards.



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill



Objective 15. Containment and Cleanup

Demonstrate the ability to implement appropriate measures for containment, recovery, and cleanup of a release of a hazardous material.

Extent of Play:

Although a spent fuel cask car is simulated to derail, there is no simulated release of radioactive material from the cask. This objective should be demonstrated by notifying and obtaining resources for assistance. Personnel (response and additional resources) should assess the impact of a possible release, demonstrate appropriate planning strategies for control and containment, and then control and contain the area around the boxes, if adequate resources are available.

Objective 16. Incident Documentation and Investigation

Demonstrate the ability to document a hazardous materials incident/accident and response.

Extent of Play:

This objective should be demonstrated by implementing appropriate log keeping, follow-up documentation, and debriefing procedures.

4.0 EXAMPLE SCHEDULE

Table 1.0 provides an example schedule for planning and executing the drill. This schedule may be modified for site-specific drill conditions.

Activity	Location	Date	Duration (approximate)
Controller Brief	TBD	Day 1	1.0 Hour
Field/Scene Walk Down	TBD	Day 2	2.0 Hours
Drill Player Briefing	TBD	Day 3	0.5 Hour
Drill Conduct	TBD	Day 3	2.0 Hours
Controller Debriefing	TBD	Day3	1.0 Hour
Player Debriefing	TBD	Day3	1.0 Hour



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

5.0 PARTICIPATION

The following is a list of suggested personnel/groups that may participate in the drill, depending on the desired complexity of the drill. (Many of these agencies may be simulated for the purpose of the drill.)

Local Response Organizations

- Local Fire Department
- Local Municipal Police Department
- Local Emergency Operations Center (EOC)
- County Sheriff's Office
- Emergency Medical Service/Ambulance/Hospital
- Local HAZMAT Response Team (if available)
- Other Mutual Aid Organizations (e.g., nearby Air Force Base or Power Plant response team)

State/Federal Agencies

- U.S. Environmental Protection Agency (EPA) Emergency Response Team
- State Environmental Regulatory Agency Emergency Response Team
- State Emergency Operations Center (EOC)
- National Response Team
- DOE Facility Simulated as Initiating Shipment
- National Response Center (U.S. Coast Guard)
- Regional On-Scene Coordinator
- Regional Radiation Assistance Program (RAP) Team
- State Radiation (RAD) Response Team
- Nuclear Regulatory Commission (NRC)

Commercial Organizations

- Commercial Licensed Radioactive Materials Transporter
- Commercial Contractor Trained for Radioactive Material Cleanup



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools



6.0 CONDUCT

The following section provides guidelines for drill conduct.

Concept of Operations

Three groups of personnel should participate in the drill: Players, Controllers and Observers.

Players

Players are individuals who have assigned roles during an emergency. Players should respond to the scenario as they would during an actual emergency, initiating actions to control and mitigate the simulated emergency to ensure the health and safety of response personnel and the public. Players are expected to obtain necessary information through established emergency information channels and to use their own judgment in determining response actions when resolving problems.

Controllers

Controllers are responsible for the safe and effective conduct of the drill. They perform an active role in the drill by providing data to Players. Controllers are the only non-Players who provide information or direction to Players. Controllers may prompt or initiate certain Player actions to ensure drill continuity. Controllers are identified by wearing a standard identification device.

Observers

Observers are persons who do not have an active drill role but who watch drill conduct. Observers do not communicate directly with players. They should, however, report any safety concerns to a controller. Observers are identified by wearing standard identification devices different from those worn by controllers.

Controlling Messages

Drill Messages

Drill messages are used to control the flow and progress of the drill. These messages are designed to simulate the physical indications that would normally be available to responders in an actual emergency. Drill messages are issued by Controllers to Players at appropriate times. The issuance of drill messages is coordinated via the scenario timeline; Controllers are briefed prior to the drill in a controller briefing. Concurrence from the Lead Controller during the drill is **not normally** required.

Contingency Messages

Contingency messages are used to ensure the continuity of the drill in the event that Players do not initiate actions that are critical to the drill timeline. In most instances issuance of contingency messages requires the notification of the Lead Controller PRIOR to issuance.

Drill Controller Debrief/Drill Report

Immediately upon termination of the drill, Drill Controllers should meet to review player actions and identify drill issues. A drill report documenting drill observations should be prepared upon completion of the drill and should be submitted to the appropriate organizations.



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Drill Ground Rules

At no time shall Players, Controllers or Observers physically walk across the highway or railroad tracks without the escort of Safety Controllers or Public Safety Officers.

Players shall not have prior knowledge of the scenario.

The drill scenario should not include any actions or situations that degrade the actual condition of systems and equipment, affect the detection and assessment of actual emergencies, or diminish the capability for response to actual emergencies.

No actions or reactions shall be initiated that involve actual operation of equipment (other than radiological monitoring) or affect operating capability.

Emergency response facilities should not be pre-activated and response personnel should not be prestaged. All players should follow their normal work routines until drill events cause them to initiate emergency response actions.

Except for the actions identified in the list of actions to be simulated, or as otherwise directed by drill Controllers, Players are to respond to drill events and information as if the emergency were real.

Players shall act as if simulated hazardous conditions were real.

All drill participants shall take no action that reduces the safety of themselves or the public.

All drill participants shall adhere to public laws, including traffic regulations, and shall follow any orders given by law enforcement personnel.

Controllers should only provide Players with the information that they are specifically designated to disseminate in their assigned functional area. Players are expected to obtain other necessary information through existing emergency information channels.

In the event that Players do not initiate actions "critical" to the successful completion of the drill scenario, Controllers should issue Contingency Messages, which direct Players to initiate specific actions and/or provide on-the-spot training to assist completion of critical actions.

All drill messages and communications shall be preceded and followed by the phrase, "THIS IS A DRILL."

Drill Guidelines

The responsibility of Drill Controllers is to ensure that drill events occur in the sequence prescribed by the scenario and to monitor drill play. Drill Controllers must be familiar with the emergency plan and procedures that pertain to their assigned area.

Before Drill Day

- Familiarize yourself with the drill objectives and extent of play applicable to your area of control.
- Ensure that you understand the scenario and timeline.
- Obtain and review emergency procedures applicable to your area of control.
- Familiarize yourself with the organization and communication methods.



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

**planning tools**

- Review drill messages and scenario information that you are responsible to provide to Players. Ensure that you understand how the Players are to receive this information and what their responses should be.
- Ensure you know how to contact the Lead Controller for questions or problem resolution.
- Perform a field walkdown of your observation location(s). Ensure you know where and when you must report prior to drill commencement.

Immediately Prior to the Drill

- Report to your assigned area as scheduled.
- Familiarize yourself with your assigned work station and equipment.
- Ensure that you are readily identifiable by all Players.
- Identify and test a phone or radio that you may use for communications with other Controllers.
- Identify yourself to any Players who may be in your area of control. Ensure they are familiar with your role.

During the Drill

- Ensure that safety remains the number one priority for all actions and activities carried out during the drill.
- Identify all Players that you are controlling during the drill, and inform them of your function.
- If applicable, brief all Players in your area on drill ground rules and/or initial conditions. Explain that you may help/instruct the Player(s) in proper response actions based on their actions during the drill.
- Remain at your assigned location until the drill has been terminated by the Lead Controller.
- Ensure that each Player in your area of control/observation has been logged on an attendance sheet and that the attendance sheet identifies the appropriate facility.
- If a real emergency occurs that affects the Players in your area of control/observation, terminate your portion of the drill and notify the Lead Controller.
- Refer any/all general public and/or media inquiries to the "Official Drill Information Contact Point," TBD, as applicable, based on your location.
- Position yourself to maximize your effectiveness in issuing messages and/or observing the players.
- Record arrival times and actions of key players.
- Distribute drill messages, as required, and provide additional input, as necessary, to keep the scenario progressing as designed. Make sure that the Players understand the messages you give them.



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill



DEPARTMENT OF ENERGY



- If you are uncertain what actions are being taken by the Players or why, make sure you ask, so that you understand the extent of play. Phrase questions so as not to prompt the Players of expected actions. Allow the Players reasonable flexibility to perform their functions and demonstrate their skill, knowledge, and initiative.
- Do not allow external influences to distract the Players.
- Do not allow simulation when notification/communication equipment is available (unless the action would decrease the level of personnel safety).
- Note all your observations, as appropriate, on the provided Drill Chronology Logs and Observation Checklists.
- Do not allow Player actions to continue if they would obviously impair scenario continuity. Notify the Lead Controller if the timeline is off schedule, if the Players depart significantly from the scenario, or if you are in doubt as to what to do.

Upon Drill Termination

- Complete Drill Chronology Logs.
- Document drill findings on the appropriate Drill Controller Checklists and Chronology Logs.
- Participate in the post-drill Drill Controller briefing.

Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools



Example Drill Controller Organization

Name	Position
TBD	Lead Controller
TBD	Lead Incident Scene Controller
TBD	Media/Public Interface PIO Representative
TBD	Media/Public Interface PIO Representative
TBD	Incident Scene-Safety
TBD	Motorist Role-Player
TBD	DOE Facility Operations Center
TBD	Incident Scene- State Law Enforcement
TBD	State Emergency Preparedness
TBD	County Sheriff Office Dispatcher
TBD	Fire Department Dispatcher 1
TBD	Fire Department Dispatcher 2
TBD	County EMS Dispatcher
TBD	Incident Scene Commander
TBD	Incident Scene-Responding Unit(s)
TBD	Incident Scene-Responding Unit(s)
TBD	Scene-Responding Unit(s)
TBD	Law enforcement officer in caboose



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

7.0 NARRATIVE SUMMARY/TIMELINE

The following section provides a narrative summary of the drill scenario and an approximate timeline (Table 2, located at the end of this section) for drill activities. The timeline also provides anticipated points during the drill where dissemination of the drill messages contained in Section 8.0 is appropriate. The scenario and timeline are suggested guidelines for the drill and may be modified to meet site-specific conditions.

Initial Conditions (which are assumed to have occurred prior to drill commencement)

A rail shipment of spent nuclear fuel (Class 7 Radioactive) was in transit to a DOE facility. The shipment consists of eight casks (Type B containers).

Meteorological Conditions Summary

- Wind direction is “as read”
- Temperature is “as read”
- Wind speed is “as read”
- Rain is not in the immediate forecast

Drill Play Begins

A derailment occurs while the train is traveling through the local county. The train derails near (approximately + to + mile from) where the railroad crosses State Highway XX. Ten rail cars leave the track and two of them turn over. The derailment causes three casks to fall onto the ground with one remaining on the flatbed. None of casks are breached. Radiation levels are normal. No contamination is released.

The State Law Enforcement Department (e.g., Highway Patrol, Police Department, or Public Safety) escort in the (simulated) caboose immediately initiates an actual emergency notification to the actual State Law Enforcement Department field escort, State Warning Point, and the appropriate DOE Operations Center. A simulated TRANSCOM message is simultaneously made to the State Environmental Protection Division Warning Point and the appropriate DOE Operations Center. A motorist (role player) in a vehicle in the vicinity of the (simulated) train derailment “observes” the accident and reports it, via cellular phone, to the local emergency response network (e.g., 911) dispatch center. The report provides no information other than the location of the accident.

Emergency response units should be dispatched to the incident scene, based on the information available, and transmitted via the notification/communications system. Initial emergency response units notified for deployment should include, at a minimum (either real or simulated), local police/ sheriff’s department, fire department, Radiation Response Team, and EMS.

The units should not transit in an “emergency mode” (i.e., no lights or sirens) and should not take/perform any action that impacts the general public, such as establish unnecessary roadblocks or detours at or near the simulated accident scene. All arriving units should be timed (to determine “maximum” response time) and accounted for. Any



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

**planning tools**

unit arriving with radiological monitoring equipment should demonstrate radiological monitoring/survey operations. The first emergency response unit to arrive should assume the position of Incident Commander (IC). They should establish initial control of the scene, cordon off the accident area, and set up traffic control or rerouting. Within a reasonable time of the arrival of the first responder unit, the remaining response units (Fire, Police, EMS, etc.) should arrive.

An initial hazards assessment should be made of the scene. However, due to the unknown nature of the hazard and potential of release, personnel should not be allowed within direct proximity of the overturned rail cars. (Appropriate monitoring equipment and PPE should be utilized for the physical site assessment). The IC should brief responders on the observed hazards at the scene prior to any response actions occurring. A strategy for site safety and response actions should be developed in accordance with the guidelines set forth in the Emergency Response Guidebook.

Proper site control and evacuation procedures should be implemented. Upon arrival at the scene, EMS should assess the scene and plan/prepare for potential contamination hazards.

A resources assessment should be conducted by the IC/Safety Officer. The resource assessment should reveal monitoring equipment and appropriate PPE is needed for additional site assessment. If monitoring equipment is available, the responders should don appropriate PPE and proceed with area surveys for possible contamination. If monitoring equipment is not available the IC should contact other responding agencies for assistance, such as the state spill response team or another higher level technical response unit in the area. No further action should be taken at the site until monitoring occurs.

The RAD Response Team (mobilized by the call from the escort) should arrive and report to the IC. The IC should provide a status briefing and make appropriate requests for radiological monitoring to demonstrate an understanding of RAD Response Team capabilities. The IC/responding unit should remain on scene until such time as they are relieved by a deployed RAD Response Team (simulated) senior officer, and operations transition to the recovery mode.

The on-site portion of the drill should be terminated subsequent to transition to recovery mode.

A drill debriefing should be conducted subsequent to termination of the drill to provide feedback to the player organization.



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Table 2.0. Timeline

Clock Time	Suggested Drill Time	Event/Expected Action	Message No.
	-01:00	All controllers are in place. Communications and time check completed between Lead and Controller Staff.	
	-00:15	Incident scene is set up (Drill Controllers, Players, prop signs, etc.).	
	00:00	Train derails near railroad crossing with State Highway XX.	
	00:00	State Law Enforcement Department escort in (simulated) caboose notifies actual State Law Enforcement Department escort, State Warning Point, and nearby DOE facility operations center.	1
	00:05	Motorist calls (actual) emergency response network (e.g., 911) and reports accident/scene conditions.	2
	00:10	Local/County/State dispatcher(s) notification contingency.	3
	00:15	Emergency response units begin arriving at the incident scene.	4
	00:20	Site security and control established.	
	00:45	Site assessment for injuries and hazards begins along with the resource evaluation. Incident response strategy is developed.	5
	01:00	Radiation survey is performed (if equipment is available).	
	01:15	Radiation Response Team is prompted to deploy if dispatch/deployment has not occurred before this time.	6
	01:30	Radiation Response Team arrives, debriefing occurs, and IC transitions.	7
	TBD	Drill Hold and Resume Play Contingency.	8A/B
	02:00	Drill Termination announcements to all agencies.	9
	02:15	Drill Controllers and players return incident scene to pre-drill conditions.	
	02:45	Drill Controller/Player debriefing is held.	



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill



8.0 MESSAGES

Message 1

Notification to State Warning Point and DOE Facility Operations Center

TO: State Law Enforcement Department Escort in (Simulated) Caboose

FROM: Lead Controller

TIME: (00:00)

NOTE: Direct the law enforcement escort to call in this message via cell phone to commence the drill. This message provides notification of the train derailment. The controller should describe the accident scene to the law enforcement escort roleplayer prior to issuing this message, and may use the scenario drawing in this package to help give the role-player an accurate image of the accident scene.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

Issue the following message via phone to the State Warning Point and nearby DOE Facility Operations Center:

This is a drill. This is a drill.

This is _____. I am an escort on the _____ train heading from DOE Facility A to DOE Facility B with a cargo of eight spent nuclear fuel casks.

The train has derailed near State Highway _____. Ten rail cars have left the track and two of the rail cars have overturned. Three containers are lying on the ground near the overturned cars. There is no smoke or evidence of fire or an explosion.

Please alert the appropriate response agencies immediately.

This is a drill. This is a drill.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Message 2

Role Player (Motorist) Initial Notification Call

TO: Emergency Response Network Dispatcher

FROM: Motorist (role-player)

TIME: (00:00)

NOTE: Call in this message via cell phone upon Lead Controller authorization. This message provides a "bystander" eyewitness notification of the train derailment.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

Call "911" and issue the following message:

This is a drill. This is a drill.

This is _____. I am on State Highway _____ at the railroad crossing and there has been a train derailment.

Several rail cars have left the track and some have overturned.

You had better get help out here fast.

This is a drill. This is a drill.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools



Message 3 (Contingency)

Local/County/State Dispatcher(s) Notification

TO: Applicable Dispatcher(s)

FROM: Applicable Dispatcher Controller(s)

TIME: (00:10)

NOTE: This contingency message serves to ensure that the appropriate notifications are made by each respective dispatcher if notifications are not “automatically” initiated, per local emergency procedures, without Drill Controller intervention.

Direct initiation of notifications IF dispatcher receives emergency notifications, but does not initiate notifications per procedures.

Inform Lead Drill Controller(s) if notifications are not received at your dispatch locations by T+00:10.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

This is a drill. This is a drill.

For the purposes of the drill being conducted today, you are requested to make all required emergency notifications for a train accident/derailment at the railroad crossing with State Highway ____ at this time.

This is a drill. This is a drill.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Message 4

Accident Scene Description

TO: Players Within Line of Sight

FROM: Incident Scene Controller

TIME: (00:15)

NOTE: This message serves to provide players with notice to proceed with the drill and description of simulated incident conditions. Within 5 minutes the remaining first responding units should arrive and be briefed.

** Information within this message will only be relayed to responders positioned within line of site of the specified conditions. Use the scenario drawing as an aid if it does not give away unearned information to players and if it helps describe the props available or the absence of props, as applicable. **

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

Provide only those portions of the following information based on responders line-of-sight vantage point:

- The train has derailed near (approximately + to +-mile from) the railroad crossing with State Highway XX.
- No injuries are observed.
- Ten rail cars have left the track and two of the rail cars have turned over.
- Three containers are lying on the ground near the overturned cars, and none appear to be breached.
- There is no smoke or evidence of fire or an explosion.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY



**Spent Nuclear Fuel (Class 7-Radioactive)
Emergency Response Drill****planning tools****Message 5 (Contingency Message)****Hazard Assessment**

TO: Incident Commander

FROM: Lead Controller

TIME: (00:45)

NOTE: This message is to be given if play stalls during the hazard assessment and control phase. This message may be used to prompt the players to proceed with the drill. Issue only those portions of the message that are appropriate (i.e., have not been considered or begun).

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

Issue only the applicable portions of the message below:

- For the purpose of this drill, you are directed to take appropriate actions to obtain shipping paper information for the purpose of hazards assessment.
- You are also directed to determine if resources available are adequate for thorough site assessment and site control.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Message 6 (Contingency Message)

Shipper Information

TO: Emergency Network Dispatch or Incident Commander (as applicable)
FROM: Dispatch Controller or Lead Controller (as applicable)
TIME: (00:50)
NOTE: This message serves to ensure that technical information from the shipper is received by the Incident Commander. Issue the applicable portion(s) of this message as described in italics below.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

If the IC does not call the shipper directly from the Command Post or ask the dispatcher to contact the shipper within a reasonable amount of time OR if the dispatcher has been asked to contact the shipper but has not done so within a reasonable amount of time:

For the purpose of this drill you are directed to contact the shipper using the Emergency Response Number (as listed on the Shipping Documents or as provided by the IC).

If action is taken by the IC or dispatcher to contact the shipper, but the shipper is not playing or being simulated by a role player:

Relay the following message to the IC. "The material is uranium, plutonium and mixed fission products. Isolate the area, stay upwind and away from the containers, and evacuate downwind for 100 meters. The Emergency Response Guide number is 165. A radiation Response team is being deployed and should arrive within a hour."

If the dispatcher contacts the shipper (actual or role-player) but does not relay the technical information received back to the IC in a reasonable amount of time:

"For the purpose of this drill you are directed to contact the IC and relay the technical information provided to you by the shipper."

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY



**Spent Nuclear Fuel (Class 7-Radioactive)
Emergency Response Drill****planning tools****Message 7 (Contingency Message)****RAD Response Team Deployment**

TO: RAD Response Team

FROM: RAD Response Team Controller

TIME: (01:15)

NOTE: If a RAD Response Team is actually playing but the team was not dispatched OR if the team was notified but never deployed, issue the following message after a reasonable amount of time has passed since deployment should have occurred.

If the RAD Response Team is being simulated, at least one person must be designated as a role-player and sent to the Incident Command Post to interface with the IC.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

For the purpose of this drill, you are directed to go to the accident site.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Message 8 (Contingency Message)

RAD Response Team Briefing With Incident Commander

TO: Incident Commander

FROM: Lead Controller

TIME: (01:30)

NOTE: The purpose of this message is to ensure the Radiation Response Team is integrated into the Incident Command System after their arrival. If an actual or simulated (by role-players) Radiation Response Team is participating, this message will be used to prompt the IC to give a situation briefing to the Radiation Response Team if the IC does not initiate this action within approximately 10 minutes of Radiation Response Team arrival. If the Radiation Response Team is being simulated and no role-players are available, the Lead Controller will simulate the team and request a turnover briefing using the second portion of this message.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

Issue this portion of the message ONLY if the Radiation Response Team (actual or role-players) has been at the Command Post for approximately 10 minutes and the Incident Commander has not shown any initiative to provide the team with a briefing and integrate them into the response activities:

For the purpose of the exercise being conducted today, you are directed to give the members of the Radiation Response Team a briefing and then integrate them into the response activities.

Issue this portion of the message ONLY if the Radiation Response Team is being simulated by the Lead Controller:

For the purpose of the exercise being conducted today, I am role-playing the Radiation Response Team. Please provide me with a briefing at this time.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY



**Spent Nuclear Fuel (Class 7-Radioactive)
Emergency Response Drill****planning tools****Message 9A****Hold Message 1**

TO: All players

FROM: Lead Controller

TIME: Upon Suspension of Drill Play

NOTE: DO NOT issue this message without authorization from the Lead Controller. The drill play continues upon coordination and concurrence between the Lead Controller and the field controllers.

Drill play will resume at the direction of the Lead Controller approximately 5 minutes after message 9B is issued.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL.

THE DRILL HAS BEEN SUSPENDED. ALL PERSONNEL ARE TO REMAIN IN THEIR CURRENT LOCATIONS.

EMERGENCY RESPONDERS ARE NOT TO DISCUSS DRILL ACTIVITIES DURING THIS SUSPENSION. STAND BY FOR FURTHER INSTRUCTIONS REGARDING DRILL ACTIVITIES.

Make this announcement every 5 minutes.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Message 9B

Hold Message 2

TO: All players

FROM: Lead Controller

TIME: Upon Suspension of Drill Play

NOTE: DO NOT issue this message without authorization from the Lead Controller. The drill play will occur upon coordination and concurrence between the lead controller and the field controllers. Drill play will resume at the direction of the Lead Controller approximately 5 minutes after this message is issued. Controllers should use the 5 minutes prior to exercise continuation to remind players of what was occurring when play was suspended.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations

Message:

ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL.

DRILL ACTIVITIES WILL CONTINUE IN 5 MINUTES. DRILL CONTROLLERS WILL PROVIDE INFORMATION TO PLAYERS PRIOR TO CONTINUING THE DRILL.

THIS IS A DRILL

DO NOT initiate actions affecting safe operations



DEPARTMENT OF ENERGY



**Spent Nuclear Fuel (Class 7-Radioactive)
Emergency Response Drill****planning tools****Message 10****Termination Message**

TO: All Key Players/Notification Locations
FROM: Lead Controller
TIME: (02:00)
NOTE: Ensure all participating agencies are notified of drill termination via the notification system.

THIS IS A DRILL***DO NOT initiate actions affecting safe operations***

Message:

The Spent Nuclear Fuel Drill is now terminated. Please make all necessary termination notifications. A drill debriefing will be conducted at _____ (location) at _____ (time).
(Repeat Message)

THIS IS A DRILL***DO NOT initiate actions affecting safe operations***

**DEPARTMENT OF ENERGY**



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

9.0 RADIOLOGICAL DATA

The three spent fuel casks that fall off the rail car are not simulated to break open or have any radiation/ contamination leaks.

If/when radiological monitoring surveys are performed (by the first responding unit(s) or the RAD Response Team), all general area monitoring results will be “as read”, including on contact with the casks.

Controllers should take note of whether players use their equipment properly (i.e., are instruments turned on and on the proper scale), but should not prompt them to do so. Regardless of whether the instruments are used correctly, controllers should verbally indicate to players that the equipment readings are “as read.”

Note: For safety purposes, do NOT allow players performing radiological monitoring survey operations to walk anywhere close to the railroad tracks to perform/ demonstrate monitoring techniques. Instead, designate an area away from the tracks, for the purposes of the drill, for personnel to demonstrate this capability.

10.0 METEOROLOGICAL DATA

All weather conditions for this drill are “As Read,” with the exception that rain is NOT in the immediate forecast. If rain or another form of precipitation is actually occurring when drill play begins, players should be informed that precipitation is not occurring.

Drill play will be suspended for certain adverse weather conditions as described in the Safety Plan.

11.0 PUBLIC INFORMATION DATA

There are no public information activities for this drill.

Refer any/all general public and/or media inquiries to the “Official Drill Information Contact Point”, as applicable, based on your location.



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools



12.0 DRAWINGS/PROPS

Drawings

A suggested site schematic drawing is provided on Figure 1. This may be modified to suit local site conditions.

Props (suggested)

Props that may be used for this drill include:

- Actual rail cars
- Placard(s) for Spent Fuel Casks (see Figure 2)
- Simulated shipping casks - May use metal garbage bins or other large boxes
- Shipping Documents (Figure 3)

Note: You may decide to use signs, flags and/or traffic cones as “props” in lieu of an actual truck and metal boxes, based on your budget and logistics considerations.

Figure 1: Suggested Site Drawing 0

Note: Road names and landmarks may be drawn onto this figure to make it area-specific.



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive)
Emergency Response Drill



Figure 2: Placard for Spent Fuel Casks



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

planning tools


Figure 3: Shipping Documents

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable																																																																					
								Shipper's No. _____																																																													
(Carrier _____)				SCAC. _____		Carrier's No. _____																																																															
Received, subject to the classifications and tariffs in effect on the date of this Bill of Lading																																																																					
at _____ date _____ from _____																																																																					
<small>The property described below is in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word "company" being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any of said property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written herein contained (as specified in Appendix B to Part 1035) which are hereby agreed to by the shipper and accepted for himself and his assigns.</small>																																																																					
(Mail or street address of consignee for purposes of notification only)																																																																					
TO: <input checked="" type="checkbox"/> Consignee Street _____ Destination _____ Zip: _____				FROM: <input checked="" type="checkbox"/> Shipper Street _____ Origin _____ Zip: _____																																																																	
Route: _____																																																																					
Delivering Carrier _____																																																																					
<table border="1"> <thead> <tr> <th>No. of packages</th> <th>HM</th> <th>Description of articles, special marks, and exceptions</th> <th>Hazard Class</th> <th>I.D. Number</th> <th>Packing Group</th> <th>*Weight (subject to correction)</th> <th>Class or Rate</th> <th>Labels required (or exemption)</th> <th>Check column</th> </tr> </thead> <tbody> <tr> <td>4</td> <td></td> <td>RQ Radioactive materials, fissile "Highway Route Controlled Quantity"</td> <td>7</td> <td>UN2918</td> <td>NA</td> <td>21990KG</td> <td></td> <td>RADIOACTIVE (YELLOW III)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>Radionuclide: Plutonium and Uranium 235, and daughters Solid form as Plutonium and Uranium metals and oxides</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Activity: 9E2 TBq Transport Index: 0.2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Emergency Response Guidebook Number: 165</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>USA/9967/B()F</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>										No. of packages	HM	Description of articles, special marks, and exceptions	Hazard Class	I.D. Number	Packing Group	*Weight (subject to correction)	Class or Rate	Labels required (or exemption)	Check column	4		RQ Radioactive materials, fissile "Highway Route Controlled Quantity"	7	UN2918	NA	21990KG		RADIOACTIVE (YELLOW III)				Radionuclide: Plutonium and Uranium 235, and daughters Solid form as Plutonium and Uranium metals and oxides										Activity: 9E2 TBq Transport Index: 0.2										Emergency Response Guidebook Number: 165										USA/9967/B()F							
No. of packages	HM	Description of articles, special marks, and exceptions	Hazard Class	I.D. Number	Packing Group	*Weight (subject to correction)	Class or Rate	Labels required (or exemption)	Check column																																																												
4		RQ Radioactive materials, fissile "Highway Route Controlled Quantity"	7	UN2918	NA	21990KG		RADIOACTIVE (YELLOW III)																																																													
		Radionuclide: Plutonium and Uranium 235, and daughters Solid form as Plutonium and Uranium metals and oxides																																																																			
		Activity: 9E2 TBq Transport Index: 0.2																																																																			
		Emergency Response Guidebook Number: 165																																																																			
		USA/9967/B()F																																																																			
Remit C.O.D. to: Address: _____ City: _____ State: _____ Zip: _____			COD AMT \$ _____		Subject to section 7 of conditions if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement. The carrier shall not make delivery of this shipment without payment of freight			C. O. D. FEE: Prepaid <input type="checkbox"/> Collect <input type="checkbox"/> \$ _____																																																													
<small>If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight". Note: where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby _____ per _____</small>			Charges Advanced \$ _____		<small>(Signature of consignor) _____</small> FREIGHT CHARGES <input type="checkbox"/> Prepaid <input type="checkbox"/> Collect																																																																
<small>This is to certify that the above-mentioned materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.</small>			PLACARDS REQUIRED Radioactive Class 7, HRCQ		PLACARDS SUPPLIED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO - FURNISHED BY DRIVER'S SIGNATURE: _____																																																																
SHIPPER: _____			CARRIER: _____																																																																		
DATE: _____			PER: _____ DATE: _____																																																																		
_____			EMERGENCY RESPONSE _____ ()																																																																		
Permanent post office address of shipper _____			Monitored at all times the Hazardous Material is in transportation including storage incidental to _____																																																																		

9-BLS-A3 (Rev. 7/95)



DEPARTMENT OF ENERGY



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

Figure 4: Emergency Response Guide 165

GUIDE 165

RADIOACTIVE MATERIALS (FISSILE/LOW TO HIGH LEVEL RADIATION)

ERG2000

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel, and the public during transportation accidents. Packaging durability increases as potential radiation and criticality hazards of the content increase.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type AF or IF packages, identified by package markings, do not contain life-threatening amounts of material. External radiation levels are low and packages are designed, evaluated, and tested to control releases and to prevent a fission chain reaction under severe transport conditions.
- Type B(U)F, B(M)F and CF packages (identified by markings on packages or shipping papers) contain potentially life endangering amounts. Because of design, evaluation, and testing of packages, fission chain reactions are prevented and releases are not expected to be life endangering for all accidents except those of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type AF, BF or CF packages. Package type will be marked on packages, and shipment details will be on shipping papers.
- The transport index (TI) shown on labels or a shipping paper might not indicate the radiation level at one meter from a single, isolated, undamaged package; instead, it might relate to controls needed during transport because of the fissile properties of the materials.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control is not expected to cause pollution.

FIRE OR EXPLOSION

- These materials are seldom flammable. Packages are designed to withstand fires without damage to contents.
- Radioactivity does not change flammability or other properties of materials.
- Type AF, IF, B(U)F, B(M)F and CF packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, and control of fire and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions.
 - Stay upwind.
 - Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.



Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill



Figure 4: Emergency Response Guide 165 (contd)

ERG2000	RADIOACTIVE MATERIALS (FISSILE/LOW TO HIGH LEVEL RADIATION)	GUIDE 165
EMERGENCY RESPONSE		
FIRE		
<ul style="list-style-type: none"> • Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques. • Move containers from fire area if you can do it without risk. • Do not move damaged packages; move undamaged packages out of fire zone. 		
Small Fires		
<ul style="list-style-type: none"> • Dry chemical, CO₂, water spray or regular foam. 		
Large Fires		
<ul style="list-style-type: none"> • Water spray, fog (flooding amounts). 		
SPILL OR LEAK		
<ul style="list-style-type: none"> • Do not touch damaged packages or spilled material. • Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials. 		
Liquid Spills		
<ul style="list-style-type: none"> • Package contents are seldom liquid. If any radioactive contamination resulting from a liquid release is present, it probably will be low-level. 		
FIRST AID		
<ul style="list-style-type: none"> • Medical problems take priority over radiological concerns. • Use first aid treatment according to the nature of the injury. • Do not delay care and transport of a seriously injured person. • Apply artificial respiration if victim is not breathing. • Administer oxygen if breathing is difficult. • In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. • Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities. • Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. 		



DEPARTMENT OF ENERGY





Spent Nuclear Fuel (Class 7-Radioactive) Emergency Response Drill

13.0 SIMULATIONS

Most drill activities will actually be performed as if the incidents were really occurring. The following list identifies the actions to be simulated when and if these actions are indicated in response to the simulated scenario events. Additionally, Controllers may direct participants to simulate certain activities to avoid performing actions that may cause adverse effects.

- Accident scene(s), damaged equipment, injured personnel, and other simulations shall be accomplished through the use of a sign(s) indicating the derailment location, etc. Props and mock-ups may be used in this drill.
- No public notification or any other actions affecting the general public should be implemented.
- Roadblocks or detours should be physically established to prevent public access to the drill area.
- Some roles and notification phone numbers may be simulated depending upon agencies that are participating. Simulated roles may include the RAD Response Team, Federal Agencies Notified, the Shipper, and agencies other than local emergency responders. These simulations shall be accomplished through the use of role players and assigned phone numbers to role players.
- The train and containers can be simulated using appropriate props.

14.0 SECURITY

If necessary (depending on the location of your incident scene), some local law enforcement personnel (non-players) may be pre-staged at the scene for scene safety reasons (i.e., reroute traffic away from the simulated scene). However, the impact of the drill on the general public should be kept at a minimum.

Law Enforcement units and personnel who are actually dispatched as part of drill play should report to locations as directed for scene control. However, these units should NOT actually establish barricades or cordons that would affect the general public. Public Safety/Security controllers will determine the effectiveness of law enforcement activities by noting the arrival times, locations and simulated activities of these units.

15.0 MEDICAL DATA

There are no medical activities for this drill.

